

MODIFIED CLAIM

Received by International Bureau on December 16, 2003 (16/12/2003) Original claim 1 replaced by a modified claim 1 (1 sheet)

1. Medicine comprising the polyphosphonate compound with general formula I as active constituent:

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in which:

1) R1, R2, R3, R5, R6, R7, R8 represent an atom of hydrogen or a C1 - C6 alkyl or aryl group, independently of each other;

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2) X is a carbon C atom or a nitrogen N atom;

3) A represents a C1 - C6 alkyl or aryl group, a carbonyl group or a hydrophilic group, B and C represent a chemical bond, a C1 - C6 alkyl or aryl group, a carbonyl group, or a hydrophilic group;

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AMENDED SHEET (ARTICLE 19)

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- 4) R4 represents:
- a) either a hydrogen atom, an OH group, a C1 C6 alkyl or aryl group, or a C1 C6 carboxylic acid, a free doublet (if X is a nitrogen N);
 - b) or a phosphonate with formula:

in which R9, R10 represent a hydrogen atom, or a C1

- C6 alkyl or aryl group, independently of each other;

c) or a quaternary ammonium group with formula

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AMENDED SHEET (ARTICLE 19)

in which:

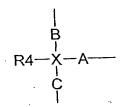
- R'1, R'2, R'3, R'5, R'6, R'7, R'8 represent an atom of hydrogen, or a C1 C6 alkyl or aryl group, independently of each other;
 - X' is a C atom or an N atom;
- A', B' and C' represent a chemical bond, a C1 C6 alkyl or aryl group, a carbonyl group, or a hydrophilic group;
- and R'4 represents a C1 C6 alkyl or aryl group, or a C1 C6 carboxylic acid;
 - or a pharmaceutically acceptable salt of these polyphosphonate compounds with formula I or II,

except for 4-amino-1-hydroxybutilidene-1, 115 biphosphonic acid.

- 2. Medicine according to claim 1, characterised in that R1, R2, R3 are advantageously identical to each other and represent methyl or ethyl groups.
- 3. Medicine according to either claim 1 or 2, 20 characterised in that R5, R6, R7, R8 are advantageously identical to each other and represent hydrogen atoms or methyl groups.
 - 4. Medicine according to any one of claims 1 to 3, characterised in that the group

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is advantageously a hydrophilic group of 1 to 6 carbon atoms.

- 5. Medicine according to any one of claims 1 to 4, characterised in that the hydrophilic group(s) is (are) typically chosen from among groups with formula -L-Q, in which L is a chemical bond or a C1 C6 alkyl group, linear or ramified and Q is chosen from among:
- a) a hydroxyl, amine, carboxyl, sulphate or phosphate group;
- b) a linear or ramified C1 C6 alkyl group containing one or several hydroxyl, amine, carboxyl, sulphate, phosphate groups;
 - c) an M, OM, CONHM, NHCOM group in which M is a hydrophilic group;
- d) a hydrophilic group according to points a), b) or c), protected by a group that becomes a hydrophilic group again after a biological hydrolysis.
 - 6. Medicine according to any one of claims 1 to 6, characterised in that the compound with formula I comprises two phosphonic groups and one quaternary ammonium group.
 - 7. 2,2-diphosphono-5-hydroxy-3-oxa-6-hexyltrimethylammonium chloride for use as a medicine.

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8. Composition for mouth hygiene by topical method, characterised in that it comprises a polyphosphonate compound with the following formula I:

$$\begin{array}{c}
OR_{6} \\
R_{5}O - P = O \\
B \\
R4 - X - A - N + R2 \\
C \\
R_{8}O - P = O \\
OR_{7}
\end{array}$$

in which:

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(l)

R1, R2, R3, R4, R5, R6, R7, R8, X, A, B and C are as defined in claim 1,

or one of its pharmaceutically acceptable salts, or a mix of such polyphosphonate compounds.

- 9. Composition according to claim 8, characterised in that it comprises between 0.01 and 20%, advantageously between 0.05 and 5%, and even better between about 0.1 and 2% by weight of compound I.
- 10. Composition according to either claim 8 or 9, characterised in that it also comprises at least one of the elements chosen from among an antibacterial agent, polishing agent, thickening agent, moisturising agent, aroma, sweetening agent, bleaching agent.
- 11. Composition according to any one of claims 8 to 10, characterised in that it is in the form of a mouthwash, a spray liquid, a toothpaste, a tooth gel.
 - 12. Use of a polyphosphonate compound with formula I:

$$\begin{array}{c}
OR_{6} \\
R_{5}O \longrightarrow P \Longrightarrow O \\
B \\
R4 \longrightarrow X \longrightarrow A \longrightarrow R2 \\
\downarrow \\
C \\
R_{8}O \longrightarrow P \Longrightarrow O \\
OR_{7}
\end{array}$$
(1)

in which R1, R2, R3, R4, R5, R6, R7, R8, X, A, B and C are as defined in claim 1,

or one of its pharmaceutically acceptable salts,

for making a medicine intended to inhibit the appearance and development of dental plaque.

- 13. Use according to claim 12, characterised in that the compound I is chosen from among:
- 10 2,2-diphosphono-5-hydroxy-3-oxa-6hexyltrimethylammonium chloride and,

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- 6-trimethylammoniohexyl-1,1-bisphosphonic acid.